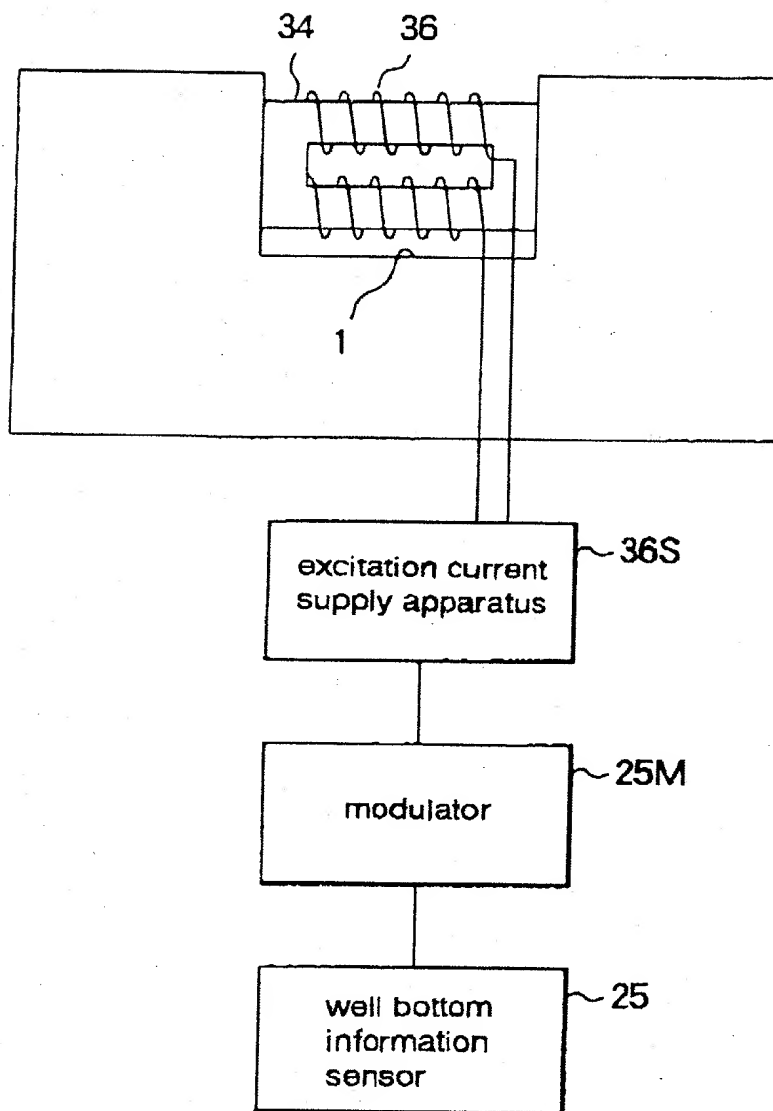
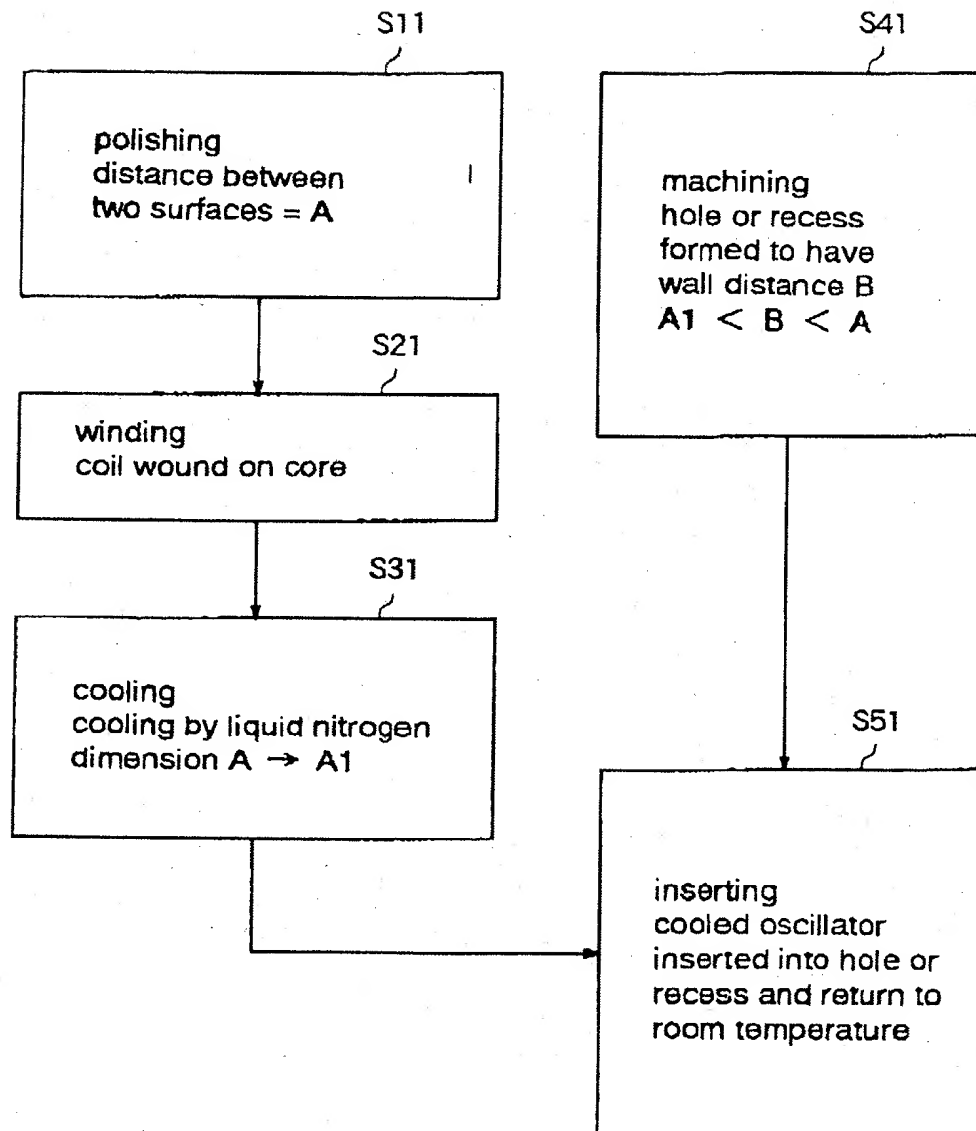


FIG. 3



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FIG. 4



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FIG. 5a

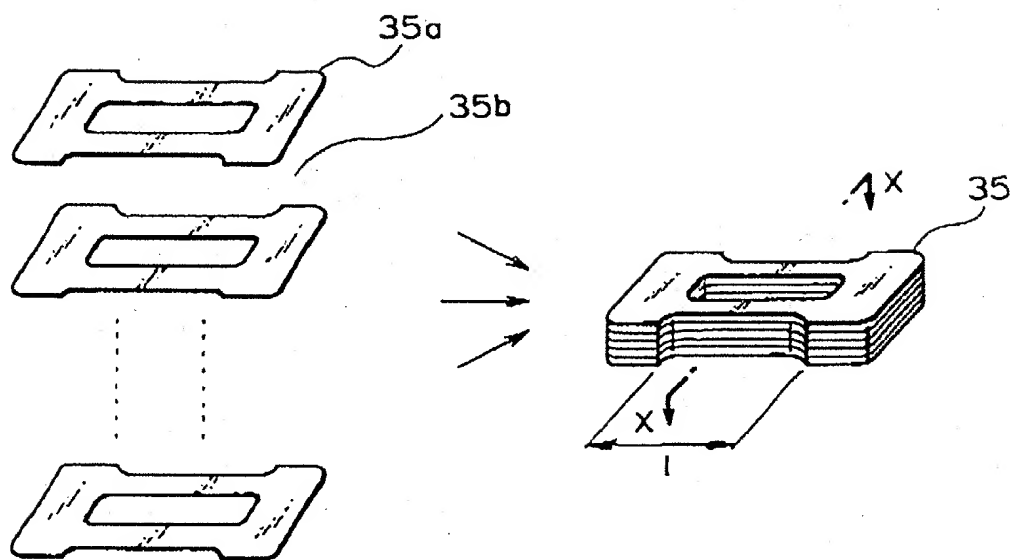
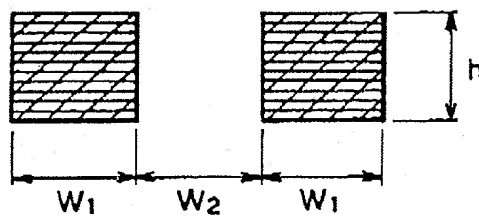


FIG. 5b



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FIG. 6

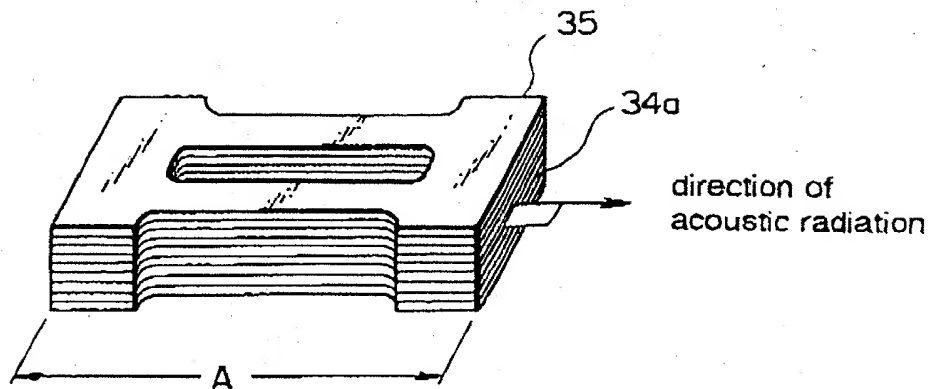


FIG. 7

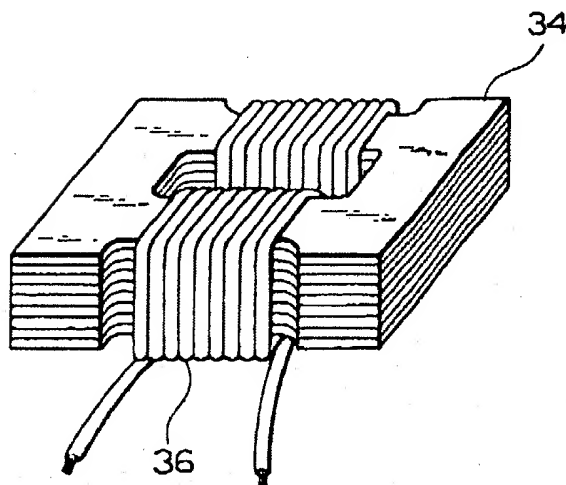


FIG. 8a

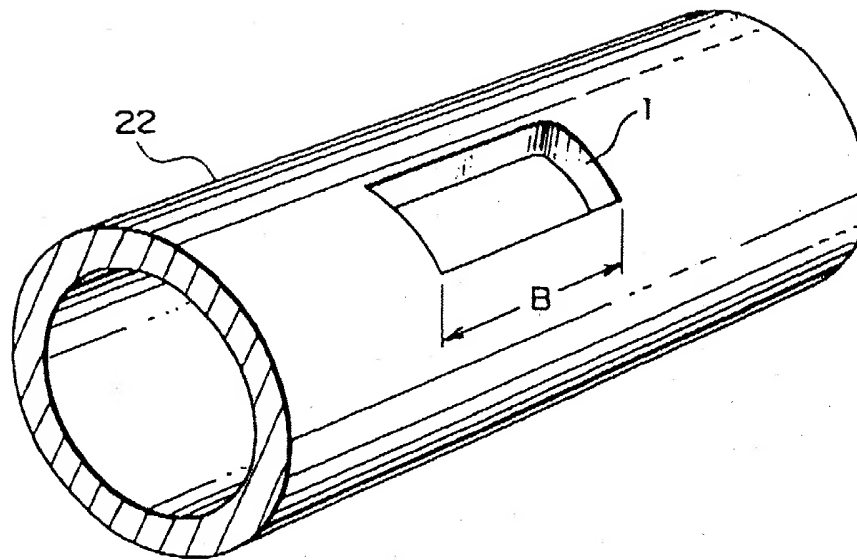


FIG. 8b

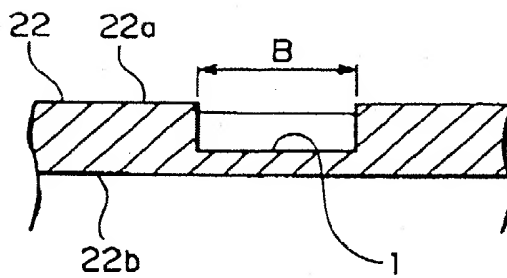
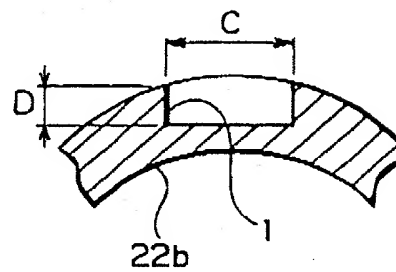


FIG. 8c



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FIG. 9

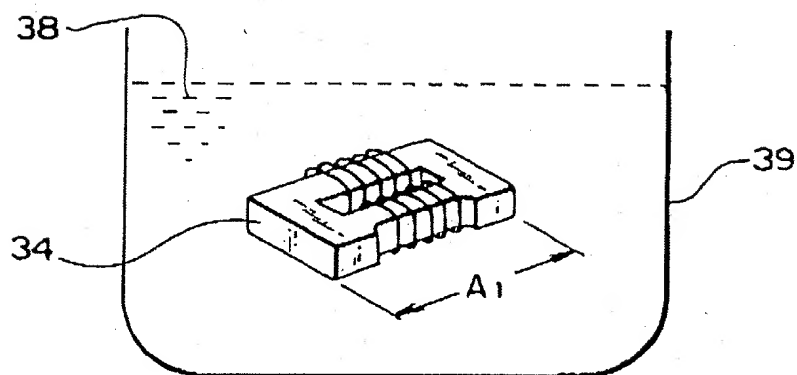
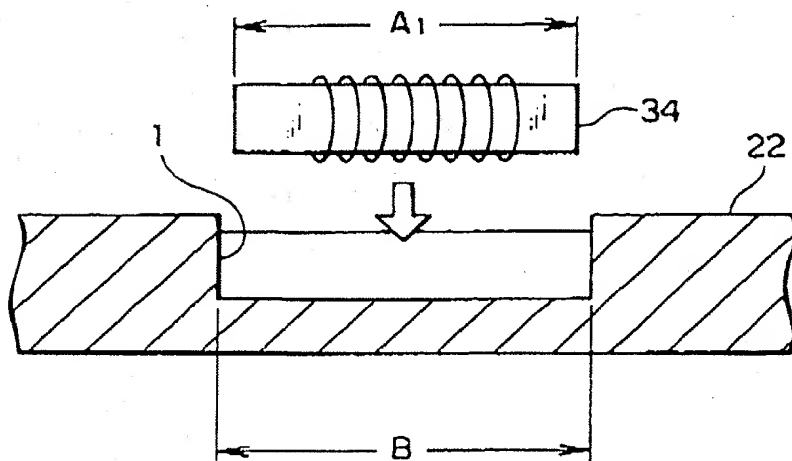


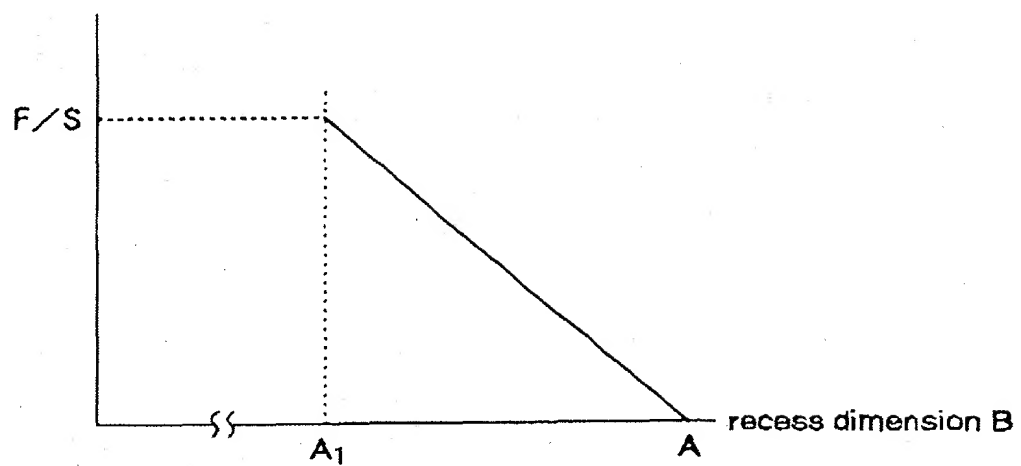
FIG. 10



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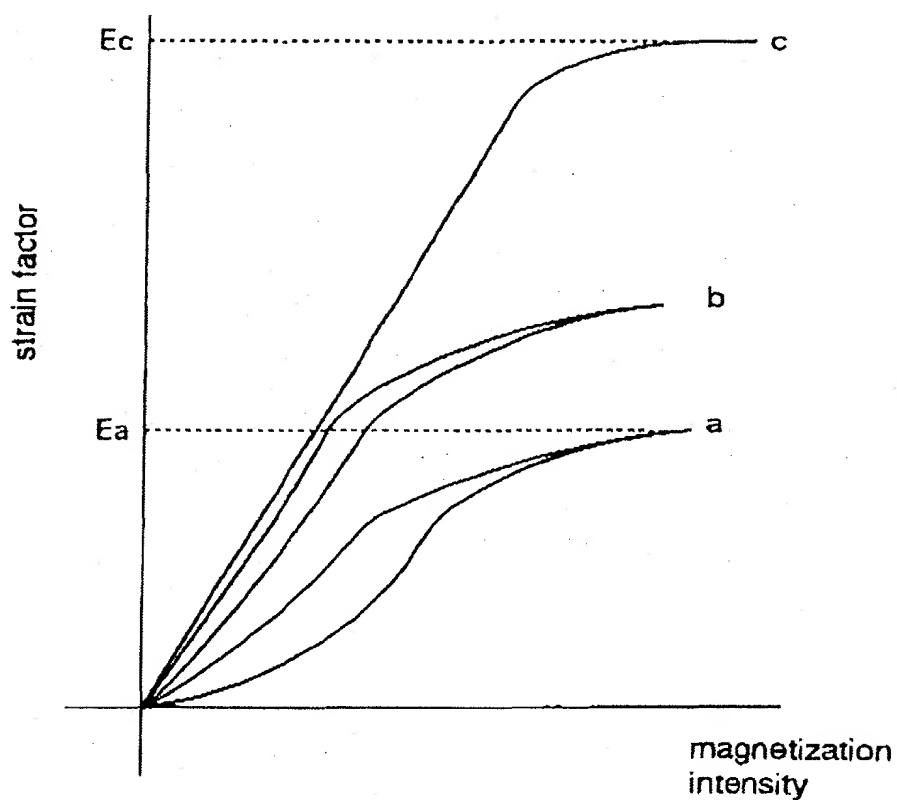
FIG. 11

pre-load force
per unit cross-sectional area



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FIG. 12



a: no pre-load

b: small pre-load

c: large pre-load

E_a : maximum magnetostriction factor with no pre-load

E_c : maximum magnetostriction factor with large pre-load

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FIG. 13a

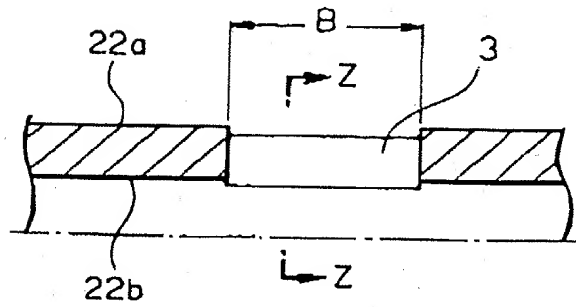


FIG. 13b

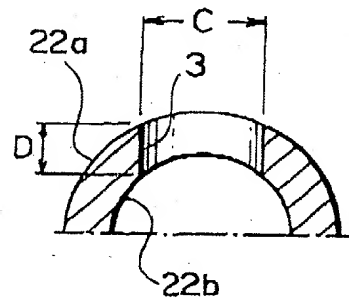


FIG. 14

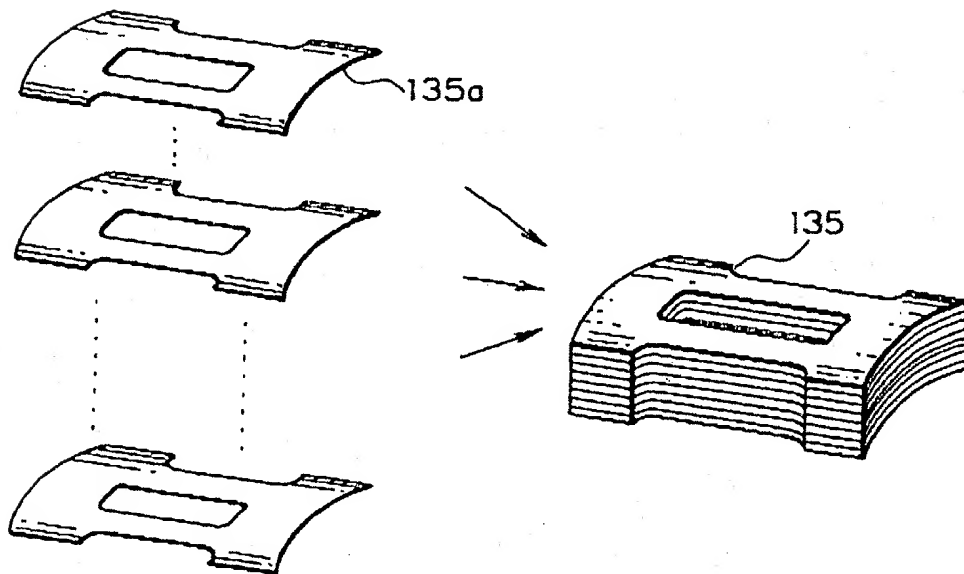


FIG. 15

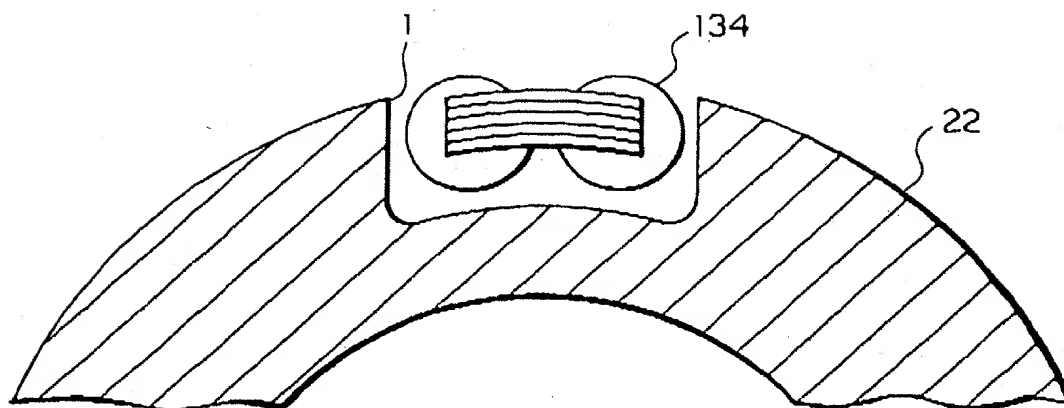
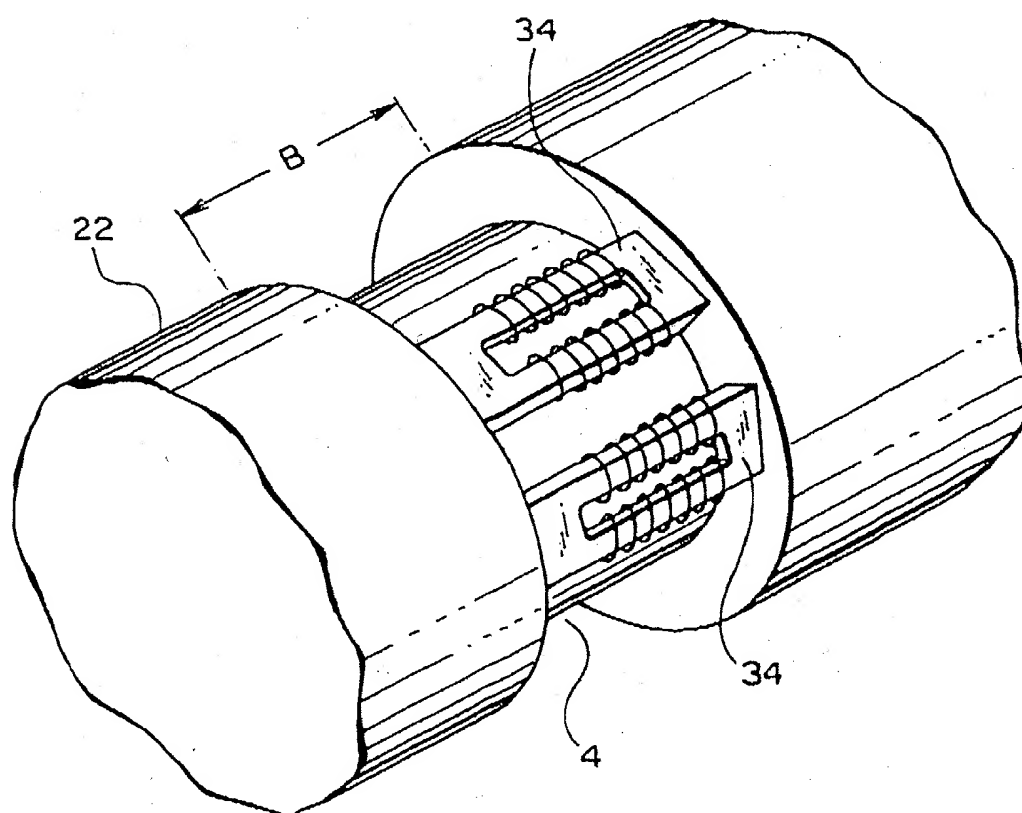
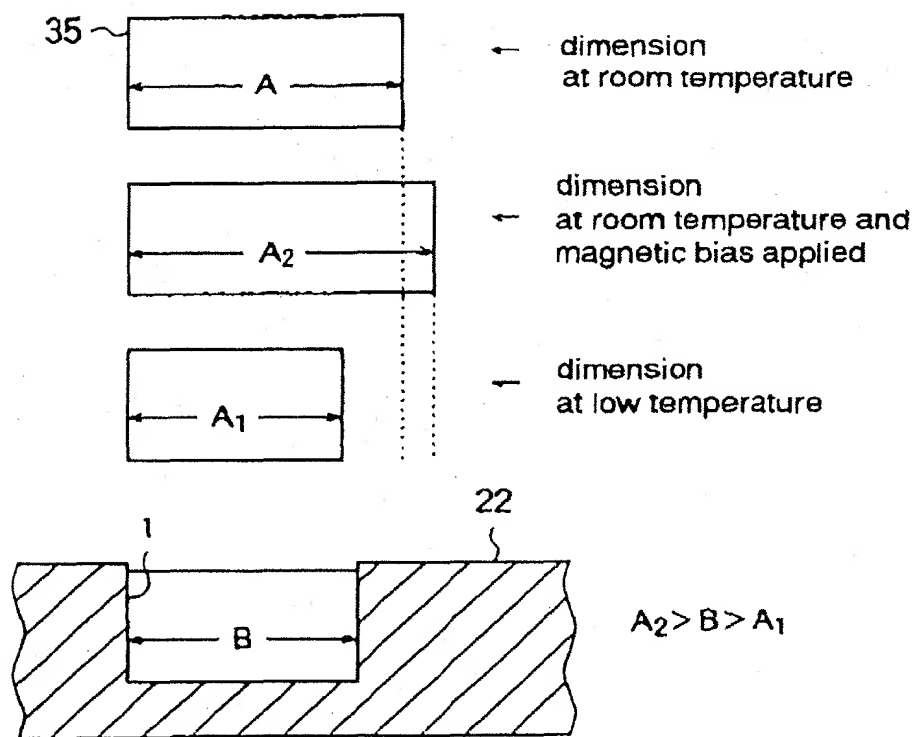


FIG. 16



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FIG. 17



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FIG. 18

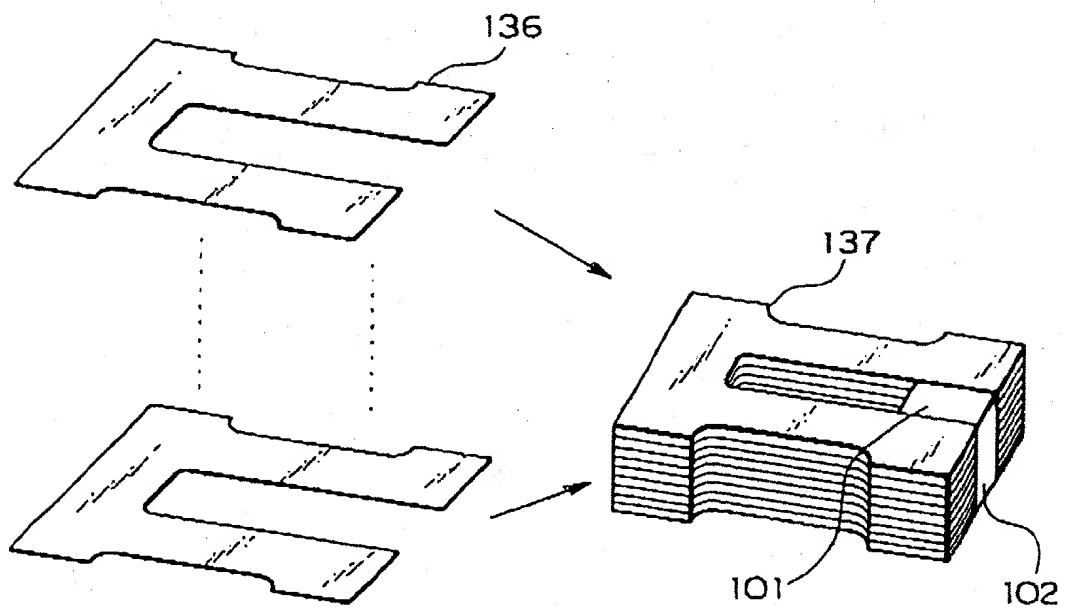
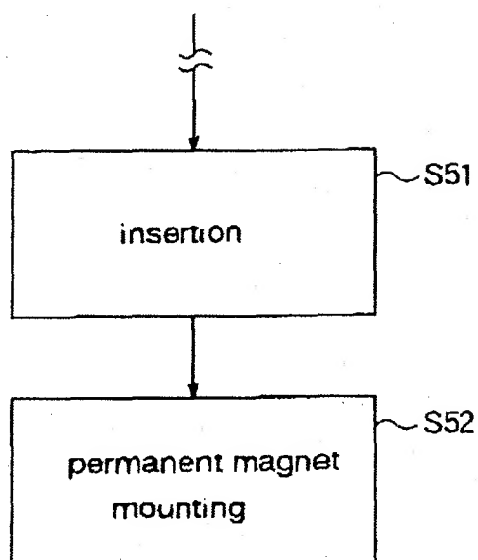


FIG. 19



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FIG. 20

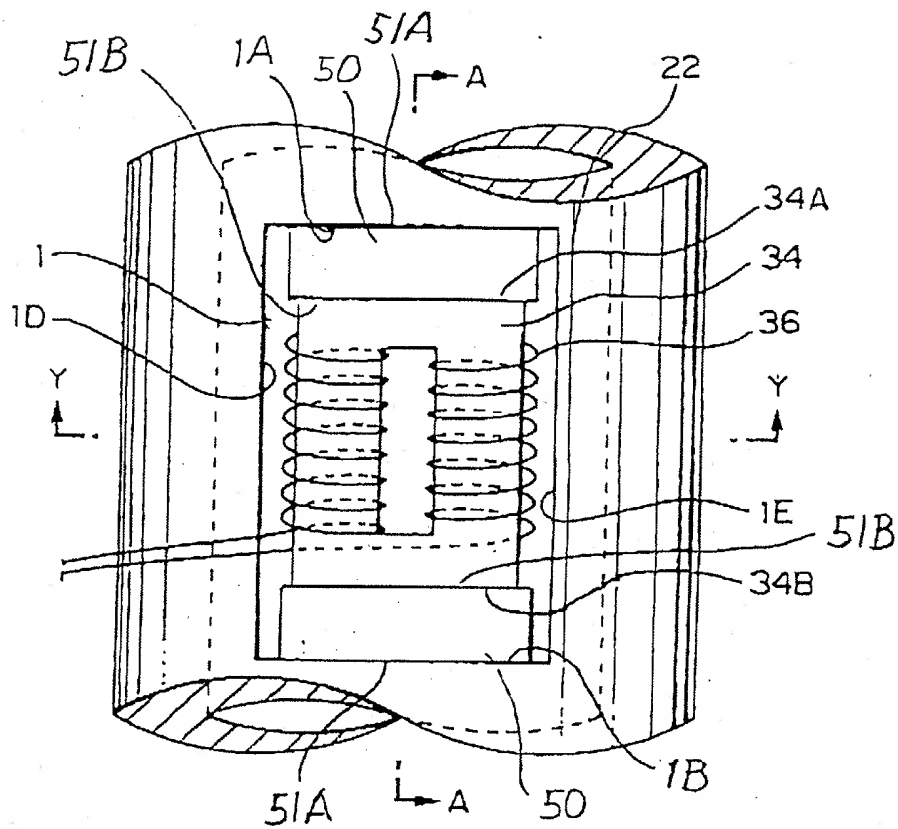


FIG. 21

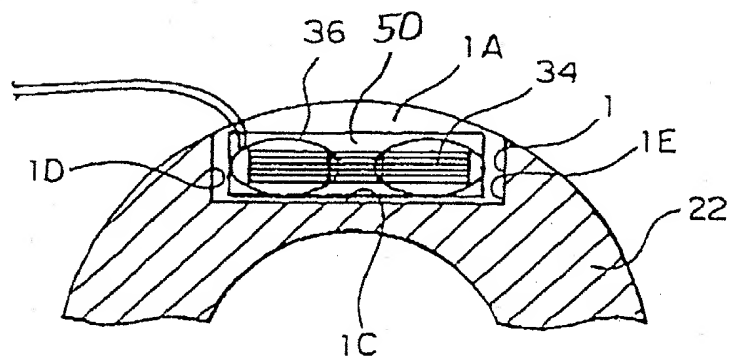


FIG. 22

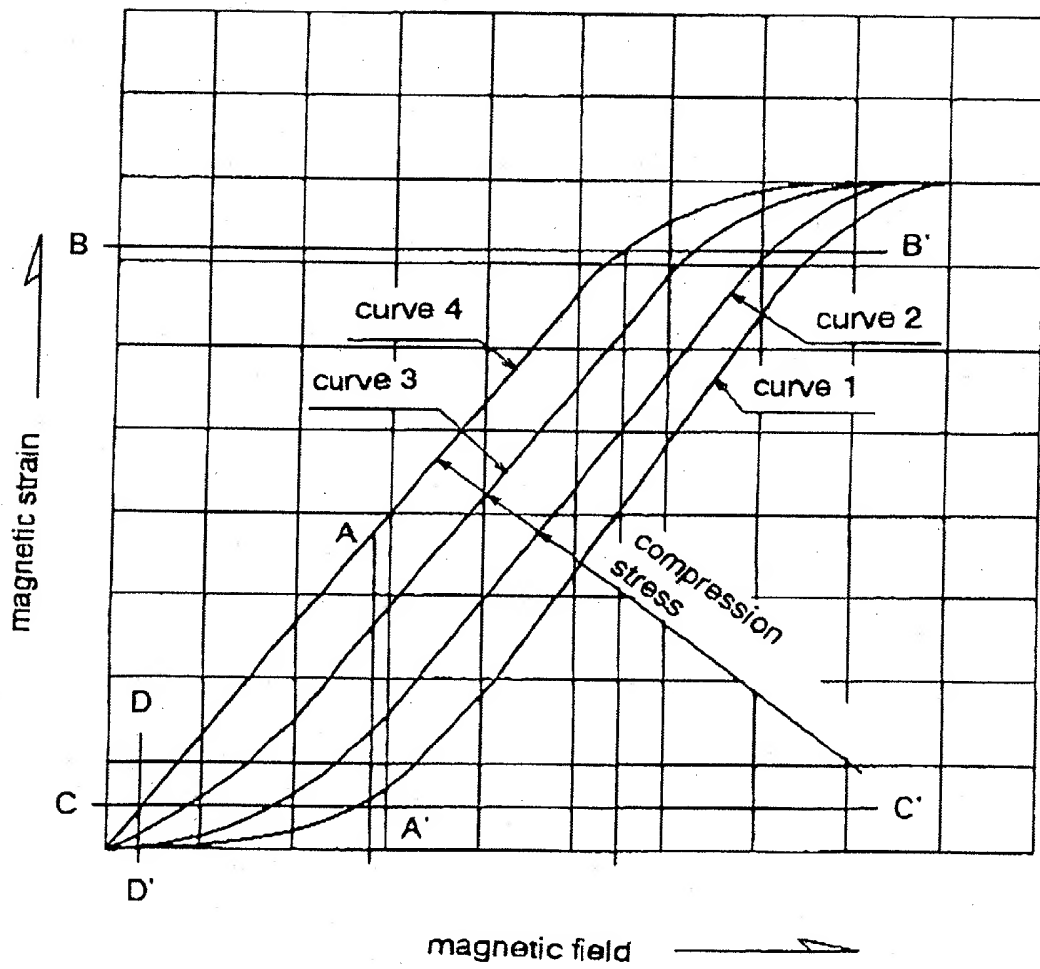
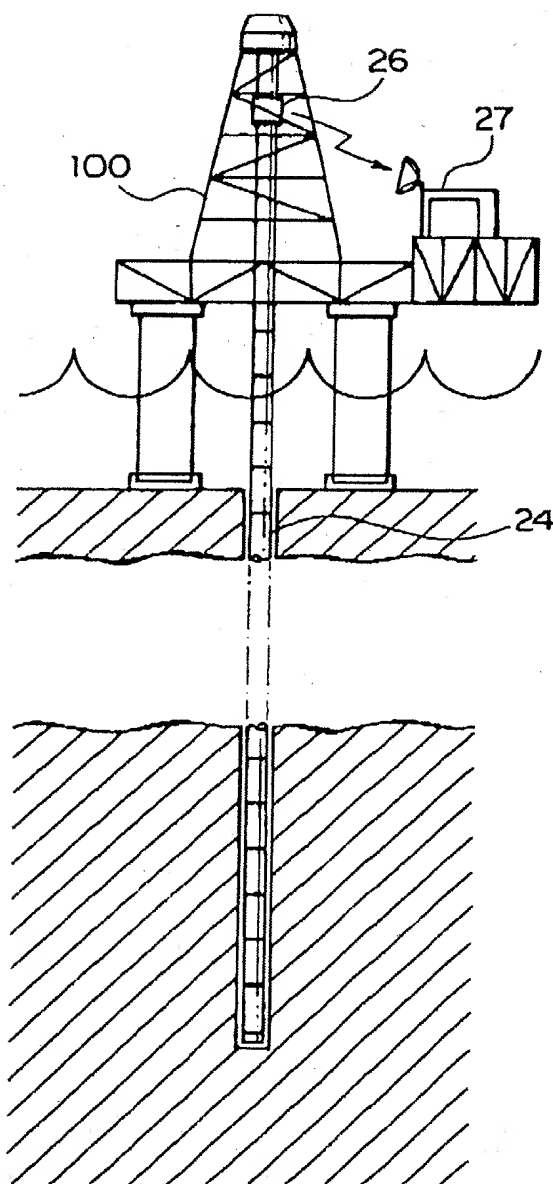
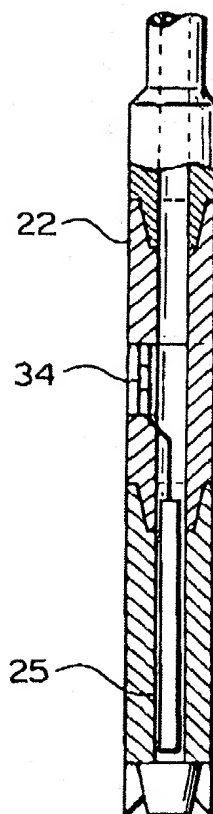


FIG. 23 PRIOR ART



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FIG. 24
PRIOR ART



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FIG. 25a
PRIOR ART

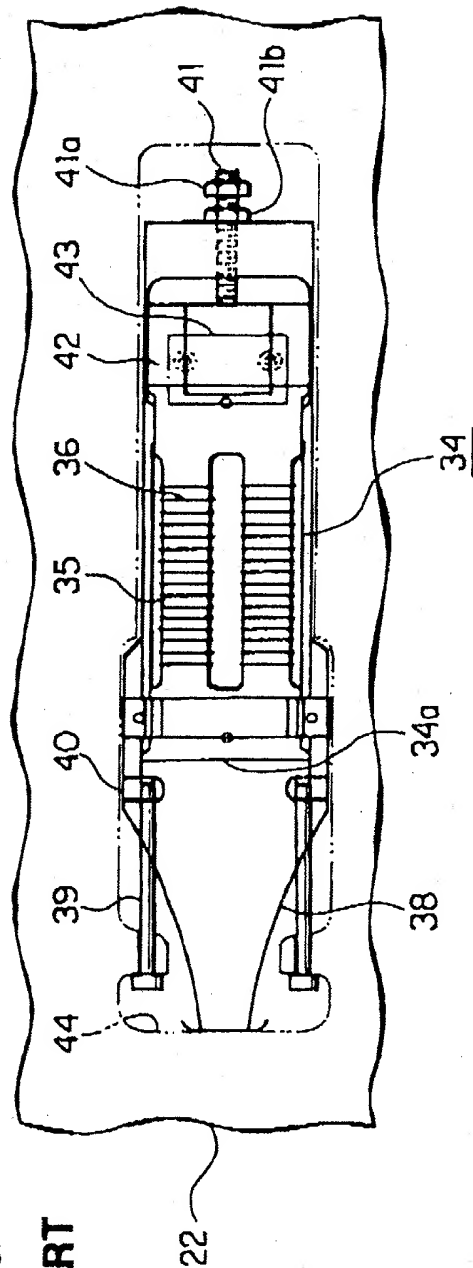


FIG. 25b
PRIOR ART

